CALIFORNIA STATE BOARD OF EDUCATION   ITEM # 6

JULY 2003 AGENDA

SUBJECT	X	ACTION
California High School Exit Examination (CAHSEE): Discussion of Potential Changes to CAHSEE.	X	INFORMATION
		PUBLIC HEARING

Recommendation:

Discuss potential changes and take action as appropriate.

Summary of Previous State Board of Education Discussion and Action

At the June meeting, the State Board of Education (SBE) discussed a paper on compensatory scoring. Changing the scoring model could be a possible option if a decision is made to make any revisions to the CAHSEE. This item presents additional information that the SBE might want to consider if the test is changed. The SBE adopted final blueprints for the CAHSEE in December 2000. If the SBE directs the California Department of Education (CDE) to move forward with developing any revisions, the CDE will conduct a standards-setting study with teachers, administrators, and community members in September to validate changes to the test. The results of the study, including a final revised blueprint, will be brought before the SBE for action at their next meeting after September.

Summary of Key Issue(s)

Re-examining blueprints is a common practice for monitoring the validity and reliability of any high-stakes test. The CDE has now administered the CAHSEE ten times. The independent evaluator, HumRRO, has reported the effectiveness of the CAHSEE at measuring the state content standards in a rigorous way, but any high-stakes test should be continuously monitored and revised for refinement. The test contractor, at the direction of CDE, has developed a paper on the reading level of the CAHSEE (see Attachment 1) and a paper on reducing the length of the test (see Attachment 2). Reducing the length of the test will cause changes in the number of items assessed and possibly in the number of standards assessed. The standards and the number of items assessed are reflected on the CAHSEE blueprints. Proposed revisions to the CAHSEE blueprints are found in Attachment 3. Attachment 4 is a paper on " Alternatives for Scaling the California High School Exit Examination," also prepared by the test contractor at the direction of CDE. The CDE would like the SBE to discuss these papers and the proposed blueprints, and hold any further discussion on the paper from June on compensatory scoring, and provide direction for the study that would take place in September.

Fiscal Analysis (as appropriate)

None.

Attachment(s)

Attachment 1: Evaluating the Readability of the California High School Exit Examination Educational Testing Service, June 10, 2003 Executive Summary (Pages 1-5)

Attachment 2: Reducing the Length of the California High School Exit Examination June 10, 2003 (Pages 1-4)

Attachment 3: CAHSEE Language Arts and Math Blueprint* Revised December 2000 (Proposed Revisions) (Pages 1-20)

Attachment 4: Alternatives for Scaling the California High School Examination Educational Testing Service June 12, 2003 (Pages 1-2)

Evaluating the Readability of the
California High School Exit Examination
Educational Testing Service
June 10, 2003

Executive Summary

<u>CAHSEE Mathematics</u>: The California content standards require students to solve mathematical application problems, and thus many CAHSEE test items require some reading. In developing items for the CAHSEE mathematics test, ETS pays special attention to vocabulary level and complexity of linguistic structures. The CAHSEE Content Review Committee also evaluates reading level, ensuring that all mathematics items have a reading level below grade 10. ETS relies on professional judgment in determining reading level; however, the Flesch-Kincaid readability index shows that CAHSEE math items have an average reading level of grade 7 on that scale. An analysis of the number of words in the item stems shows that a majority of stems on the CAHSEE, even when the words in the charts and graphs are counted, have 30 words or fewer. About 25 of the 80 items have 10 words or fewer. During the summer of 2003, ETS plans a small study comparing the mathematics standards on the CAHSEE with the mathematics standards on other exit examinations in the United States.

<u>CAHSEE English Language Arts</u>: The reading passages on the CAHSEE are selected to be grade appropriate and accessible to tenth grade students. A variety of reading levels is used on each test form so that a range of student abilities can be tested. However, all texts must be judged as at or below the tenth grade reading level. This judgment is rendered by the experienced California ELA educators on the CAHSEE Content Review Committee. In addition, word lists are sometimes used in evaluating the reading level of passages and also individual items. Use of the Flesch-Kincaid formula on 30 randomly chosen CAHSEE reading passages reveals an average reading level between grade 8 and grade 9 on that scale. ETS cautions against relying on mathematical indexes of reliability because they vary depending upon the criteria used and do not evaluate cognitive complexity, a key factor in actual readability.

Readability is an important factor affecting fairness in all testing programs, and it is especially important in high-stakes tests like the California High School Exit Examination (CAHSEE). There are several ways in which readability may be evaluated, and they are discussed below, first for the CAHSEE mathematics test and then for the CAHSEE English language arts test.

Readability of the CAHSEE Mathematics Test

If the CAHSEE mathematics test consisted only of items requiring mathematical computation, students would be asked to do almost no reading. However, because the test is based on the California content standards, students are required to do some amount of reading. As stated in the *Mathematics Framework for California Public Schools,* the goals for California students include not only developing fluency in basic computational and procedural skills but also developing an understanding of mathematical concepts and the ability to use mathematical reasoning to solve mathematical problems. Thus the CAHSEE must present word problems, graphical representations, and other similar opportunities for students to demonstrate their reasoning and problem-solving abilities.

Item Development. The mathematics item specifications for the CAHSEE program direct that the reading level in CAHSEE mathematics items be below the tenth grade. The ETS mathematics staff members use their professional judgment and experience throughout the development process in order to meet this goal. The staff works specifically to reduce the number of words in the stem and answer choices, to use high-frequency vocabulary, and to minimize the complexity of language structures (e.g., revising compound or complex sentences to make two sentences instead). We also work to eliminate idiomatic language and other figures of speech that might be unfamiliar to students. At the same time, however, we must ensure that problems are presented clearly and accurately.

In addition, the ETS staff develops items that represent a wide variety of valid approaches to assessing each standard, whenever the standard allows a variety of approaches. Some standards invite and allow items that have a context (i.e., word problems) and also items that are strictly computational. In creating the item bank and in constructing operational forms, we make sure that there is a balance of both kinds of items.

Item Review. An important additional evaluation of the reading level of the CAHSEE mathematics items occurs when the items are submitted to the CAHSEE Mathematics Content Review Committee. This committee, which is composed primarily of practicing California educators, reviews every test item for number of words, appropriateness of vocabulary, linguistic complexity, and use of idiomatic and figurative language—based on the experience of these educators in California classrooms. Many items are significantly revised and edited at this stage. The CAHSEE Community Review Committee, composed of individuals representing diverse population groups, also reviews each item for these factors, and additional revisions are made. These two reviews occur before any item is presented for field testing.

Word Lists. In addition to using their professional judgment, ETS assessment specialists sometimes consult word lists to help determine the appropriateness of specific vocabulary words for mathematics items. Word lists, which usually are researched and generated by language researchers and textbook publishers, are typically designed to indicate the grade level by which students adopt a particular word into their reading (not speaking) vocabulary. Words that are listed above the tenth grade level are not used.

Readability Formulas. As described above, the professional judgments of educators and assessment specialists, occasionally supplemented by word lists, are used to determine appropriate reading levels on the CAHSEE mathematics examination. However, when the Flesch-Kincaid readability formula is applied to the sample CAHSEE items in the item specifications, the level ranges from grade 5.0 to grade 8.8. Overall, most of the mathematics item stems fall in the grade 7 range and below on the Flesch-Kincaid scale. Two examples follow.

> 5.3:
> **A bag contained four green balls, three red balls, and two purple balls. Jason removed one purple ball from the bag and did not put the ball back in the bag. He then randomly removed another ball from the bag. What is the probability that the second ball Jason removed was purple?**
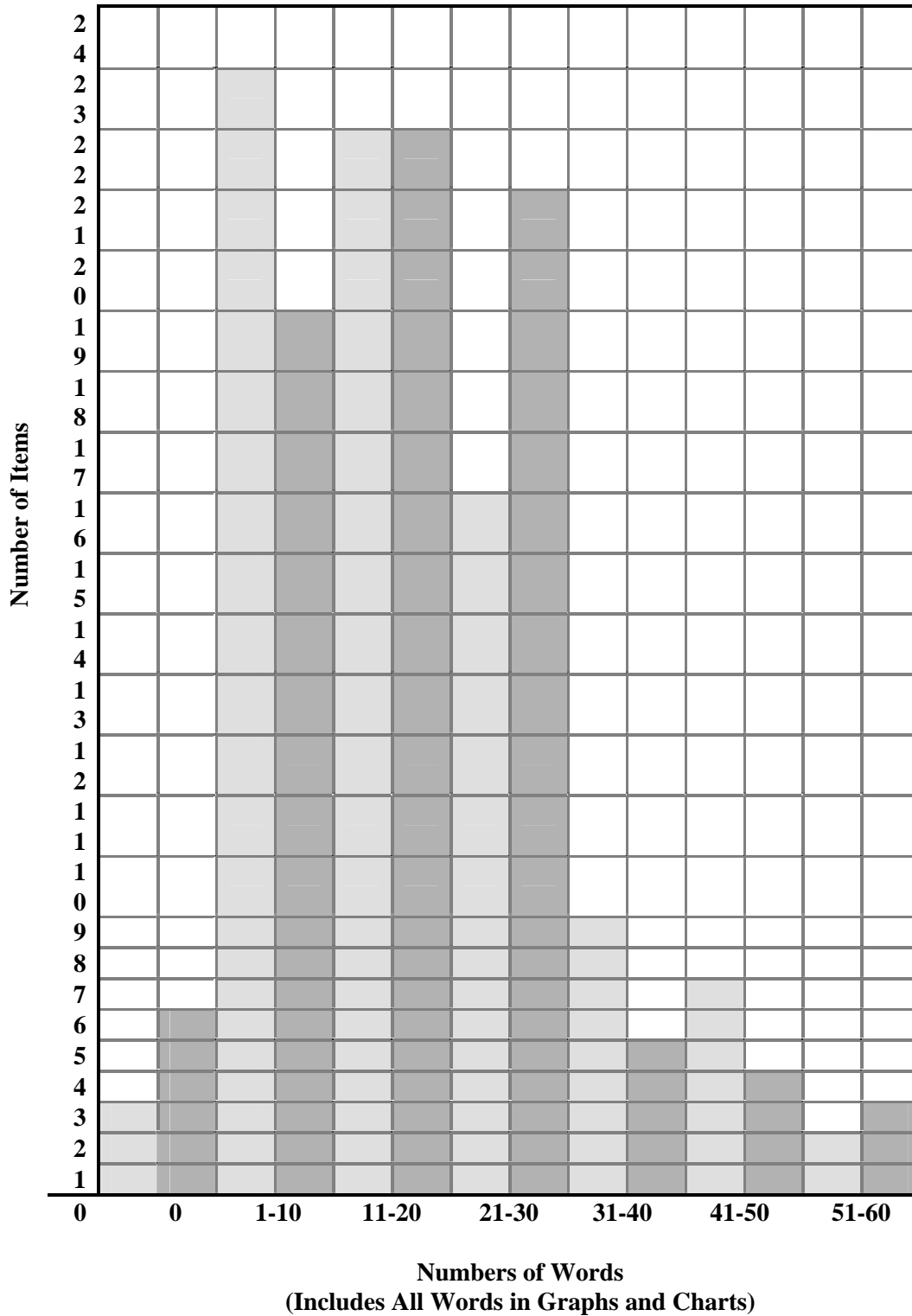
> 8.2:
> **Mr. Jacobs can correct 150 quizzes in 50 minutes. His student aide can correct 150 quizzes in 75 minutes. When they work together, how many minutes will it take them to correct 150 quizzes?**

Please note that readability scales are usually based on mathematical calculations, with little or no reference to complexity of meaning. The Flesch-Kincaid Index, for example, is based on the average number of syllables per word and the average number of words per sentence. Another readability index, based on different criteria, would give a different estimate of readability.

Number of Words. Another measure of readability is the number of words in mathematics items. The frequency of words in ten-word groups is shown in the graph below. The left-hand columns represent the operational items in the March 2001 form; the right-hand columns represent the operational items in the March 2003 form. The graph shows that, in general, most of the stems on the CAHSEE, even when the words in the charts and graphs are counted, have 30 words or fewer. In both administrations, about 25 of the 80 items had 10 words or fewer.

**Distribution of the Number of Words
in CAHSEE Mathematics Stems, 2001 and 2003**

Number of Items (y-axis: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24)

x-axis: 0, 0, 1-10, 11-20, 21-30, 31-40, 41-50, 51-60

**Numbers of Words
(Includes All Words in Graphs and Charts)**

March 2001
March 2003

Use of Mathematical Terminology. Another factor that influences readability is the use of specialized mathematical terms. On the CAHSEE mathematics exam, terms such as *mean, median, mode, scatterplot, quartile, absolute value, congruent,* and *reciprocal* appear in items, as required by the standards. The

Mathematic Framework for California Public Schools indicates that students should be able to communicate precisely about quantities and logical relationships through the use of mathematical terms. As more CAHSEE items are released, and as more teachers become familiar with the CAHSEE teacher guides, it is to be expected that students will receive more instruction on the key terms in the standards in the CAHSEE blueprint.

Mathematics Language Load Study. The test development department of the ETS K-12 division, with the help of ETS statisticians, have undertaken a small study of the performance of English learners on CAHSEE mathematics items. While there is a good body of literature already indicating that English learners benefit from shorter, clearer items, we want to know more specifically about performance on CAHSEE items. We created a study set of 30 pairs of items to try to determine specifics about brevity and clarity for this exam and this population. We will also be looking at the field tested items that have "B" and "C" (moderate to problematic) Differential Item Functioning (DIF) for English learners. Results of the study will be available in July 2003. It is our hope that the CAHSEE assessment specialists and review committees can use the results when reviewing items.

CAHSEE Mathematics Difficulty Study. During the summer of 2003, ETS also plans a small study comparing the mathematics content standards on the CAHSEE with the mathematics content standards on other exit examinations in the United States. The states whose standards we will study may include Florida, New York, North Carolina, Texas, and Washington.

Readability of the CAHSEE English Language Arts Test

The item specifications for the CAHSEE English Language Arts test give important guidelines about the reading passages to be used on the test. Each test form includes about 50 percent informational texts and 50 percent literary texts. Informational texts include articles on any appropriate subject, as well as persuasive pieces and functional texts such as "how to" articles, consumer materials (e.g., warranties, advertisements), and workplace documents (e.g., memoranda and announcements). Literary texts include classical and contemporary stories, poems, and dramatic literature as well as literary nonfiction texts (e.g., essays, autobiographies, biographies, and memoirs that are written in a literary style). In general, passages are between 300 and 1200 words, with an average length of 600 words.

The reading passages on the CAHSEE are selected to be grade appropriate and accessible to tenth grade students. A variety of reading levels is used on each test form so that a range of student abilities can be tested. However, texts must be judged as at or below the tenth grade reading level. Passages that are used for testing writing conventions and writing strategies are geared to a lower reading level than passages that are used for testing reading comprehension.

The reading level is determined by the experienced California ELA educators on the CAHSEE Content Review Committee. They evaluate each passage before it is used on the test. As with mathematics, the CAHSEE Community Review Committee, composed of individuals representing diverse population groups, also reviews each passage for appropriateness of reading level, as well as bias and sensitivity issues.

Educators base their judgments about reading level on several factors, including the length of the passage, the complexity of its paragraph and sentence structures, the vocabulary load, and the genre. Poems, for example, are generally more difficult for students to comprehend on an examination. A less tangible but extremely important factor influencing readability is the cognitive load in a passage. Cognitive load increases when, for example, abstract topics are discussed, when unfamiliar ideas are presented, and when inferences are required for full comprehension. ETS believes that experienced educators are the best judges of reading level based on all these factors.

Word Lists. Word lists are sometimes used in evaluating the reading level of passages and also individual items. In addition, when ETS staff develops items that specifically test vocabulary, we find it useful to consult word lists to help ascertain the level of the word being tested as well as the level of the answer

choices provided as possible definitions.

Readability Formulas. As described above, the professional judgments of educators and assessment specialists, occasionally supplemented by word lists, are used to determine appropriate reading levels on the CAHSEE. However, use of the Flesch-Kincaid formula on 30 randomly chosen CAHSEE reading passages reveals an average reading level between grade 8 and grade 9 on that scale. Again we note that readability scales are only mathematical calculations of such factors as sentence and/or word length, without reference to cognitive complexity. Other readability indexes, based on different criteria, would give widely different estimates of readability.

Readability of ELA Items. As with the mathematics items, the ETS staff, whenever possible, reduces the number of words in the stem and answer choices, uses high-frequency vocabulary, and minimizes the complexity of language structures We also avoid idiomatic expressions and other figures of speech unless the standards require testing them. The English Language Arts Content Review Panel and the Community Review Panel also examine items for their reading level.

Reducing the Length of the California High School Exit Examination (CAHSEE)
June 10, 2003

The California Department of Education (CDE) has been asked to examine the possibility of reducing the number of days for the CAHSEE. Currently, the English-language arts (ELA) part of the test is given on two separate days because there are two writing tasks. Each task takes approximately an hour to complete. The mathematics part of the test is given in one day. Some suggestions for ways to reduce the length of the CAHSEE ELA test so that it may be given in one day, as well as possible changes to the test blueprints, are outlined below.

To shorten the ELA test sufficiently so that ELA testing can occur on one day, there are at least three approaches that could be used individually or in combination:

1. **Eliminate one of the writing tasks.** It would be possible to eliminate one of the two writing tasks, thereby reducing testing time by as much as an hour. As currently constructed, the CAHSEE contains one writing task that is a response to a literary passage on one day and one writing task that does not rely on a passage (stand-alone writing tasks) on the second day that may be either a biographical narrative, or a persuasive composition, or an expository composition, or a business letter. If one writing task were eliminated from the test, it might be desirable to randomly rotate all categories of writing on the CAHSEE. This plan is similar to the STAR writing tests at grades 4 and 7, which randomly present one type of writing each year.

   Concerns
   - Responses to literature tend to be more difficult for students than stand-alone writing tasks. This problem could possibly be addressed with the kinds and numbers of writing tasks field-tested in October 2003.

   - There will be a need to alter CAHSEE scoring practices slightly to use a previously scored writing task to anchor the scoring to previous scorings.

   - CDE would need to re-examine the weighting of the single writing task, as now both writing tasks are weighted as 30 percent of the ELA assessment.

2. **Make Adjustments to the current ELA test blueprint**. It may be desirable to make minor adjustments to the ELA blueprint if the test is shortened—not just for length but also for the overall effectiveness of the test. One option is to eliminate some standards from the blueprint. Some standards tend to overlap each other when assessed with multiple-choice questions, and one of a pair of overlapping standards could be eliminated. Other standards are perhaps not well suited to multiple-choice questions. These kinds of problems often do not become apparent until a large number of items has been developed for specific standards. Many standards-based testing programs make these kinds of adjustments periodically to ensure there is a good alignment to standards.

   Another option is to reduce the number of questions associated with particular standards. See proposed changes below and on Attachment 3, the CAHSEE blueprints.

Proposed changes to CAHSEE ELA blueprints
We recommend eliminating some standards, including:

- Eliminate reading comprehension standard # 2.2 (assesses bibliographic citation, something students should perhaps look up rather than memorize)
- Eliminate writing strategy standard # 1.3 (assesses research methods and sources—virtually the same skills as reading comprehension standard #2.3 and writing strategy standard # 1.5)
- Eliminate writing strategy standard # 1.5 (assesses the integration of quotations into text, a concept not well assessed in multiple-choice format)
- Eliminate writing convention standard #1.5 (assesses manuscript requirements that are not established in a consistent manner in California classrooms).

We also would recommend reducing the number of items in some standards, including:

- For reading comprehension standard # 2.3, require 1 item instead of 2 (assesses the ability to generate research questions)
- For reading comprehension standard # 2.8, require 5 items instead of 7 (assesses the evaluation of the credibility of an author's argument)
- For reading literacy standard 3.5, require 3 items instead of 4 (assesses universal themes)
- For reading literacy standard # 3.10, require 1 item instead of 2 (assesses dialogue, scene designs, soliloquies, asides, and character foils in drama)

These changes would maintain the same percentage of reading items and language items on the operational forms.

Concerns
- Maintaining adequate coverage of the standards on the State Board's adopted blueprint. If the number of multiple-choice items is reduced, there is a concern about maintaining adequate coverage of the content standards listed for assessment on the blueprint. Since there are 35 standards assessed on the multiple-choice part of the ELA CAHSEE, it would still be possible to have at least one question for each standard.
- Keeping a sufficient number of items to maintain the reliability of the test. ETS would recommend retaining at least 72 multiple-choice items for purposes of reliability.
- If the test were changed, the CDE would have to conduct a new standards-setting study to establish that there is good alignment to the standards and that the items fairly and reliably measure the standards.

3. **Reduce the number of embedded field test items in the CAHSEE ELA operational form**. Currently, 12 of the 94 ELA multiple-choice items are field test items for possible future operational use (these items do not count toward a student's score). ETS recommends reducing the number of embedded field test items on the ELA part of the CAHSEE from 12 to 7, so that the total number of multiple-choice items (operational plus field test) would be 79. These items would be divided into two sessions administered on the same day. Students could be given a brief break between the two sessions of the ELA test.

The combination of 72 operational items and 7 field test items would also reduce the number of reading passages by: one operational reading passage, possibly one operational language passage, and one field test passage (currently each operational form has two field test passages). These reductions would significantly shorten testing time.

Concerns
- A drawback to this approach is that it would be impossible for ETS to fulfill its obligation to field test 5,880 multiple-choice ELA items by the end of the current contract. However, the required number of items will have been developed, reviewed, and prepared for field-testing, and they could be field tested in subsequent CAHSEE administrations.

The Mathematics Blueprint

ETS has been advised that the mathematics test would not need adjustment for length, as it is currently given in its entirety on one day. However, it may be a good time to evaluate the CAHSEE mathematics blueprint to see if there are standards that are not well assessed with multiple-choice questions or if there are standards that tend to overlap when tested with questions in this format.

For a brief summary of possible changes in the CAHSEE mathematics blueprint, see below and Attachment 3, CAHSEE blueprints. The intent of these changes would be to eliminate areas of overlap within the CAHSEE mathematics test without changing the number of items within the test or the number of items within each reporting category.

Statistics, data analysis, and probability, grades 6 and 7
- Eliminate two items from the grade 7 standard for statistics, data analysis, and probability # 1.3 (assesses the minimum, the lower quartile, the median, the upper quartile, and the maximum of a data set)
- Increase the number of items from 1 to 3 for the grade 6 standard for statistics, data analysis, and probability # 1.1 (assesses the mean, median, and mode of data sets).

Both of these standards call for finding the median of a data set. If standard # 1.3 is eliminated from the blueprint, only one standard will assess the median of a data set. In addition, removing standard # 1.3 would eliminate questions about the concepts of lower quartile and upper quartile. These concepts could be considered of lesser importance to students, especially given the small data sets being used in CAHSEE test questions for this standard.

Mathematical Reasoning, grade 7
- Increase the number of items from 1 to 2 for the grade 7 standard for mathematical reasoning # 2.1 ("Use estimation to verify the reasonableness of calculated results").
- Reduce the number of items from 1 to 0 for the grade 7 standard for mathematical reasoning # 3.1 ("Evaluate the reasonableness of the solution in the context of the original situation").

The items written for these two standards tend to be very similar. This change would eliminate the overlap between the two standards and emphasize the importance of

estimation as a tool in assessing the reasonableness of a calculated result.

CAHSEE Language Arts Blueprint*

Revised December 2000

California Content Standard	Number and Type of Items	July 2003 **Proposed Revision**
Reading (Grades Nine and Ten with two standards from Grade Eight as noted*)	58 Multiple-choice Items Total	51 Multiple-choice Items Total
1.0 Word Analysis, Fluency, and Systematic Vocabulary Development Students apply their knowledge of word origins to determine the meaning of new words encountered in reading materials and use those words accurately.	10 Multiple-choice Items	No change
1.1 Identify and use the literal and figurative meanings of words and understand word derivations.	6	6
1.2 Distinguish between the denotative and connotative meanings of words and interpret the connotative power of words.	4	4
1.3 Identify Greek, Roman, and Norse mythology and use the knowledge to understand the origin and meaning of new words (e.g., the word narcissistic drawn from the myth of Narcissus and Echo).	0	0
2.0 Reading Comprehension (Focus on Informational Materials) Students read and understand grade-level-appropriate material. They analyze the organizational patterns, arguments, and positions advanced. The selections in *Recommended Literature, Grades Nine Through Twelve* (1990) illustrate the quality and complexity of the materials to be read by students. In addition, by grade twelve, students read two million words annually on their own, including a wide variety of classic and contemporary literature, magazines, newspapers, and online information. In grades nine and ten, students make substantial progress toward this goal.	24 Multiple-choice Items	19 Multiple-choice Items
Structural Features of Informational Materials †8.2.1 Compare and contrast the features and elements of consumer materials to gain meaning from documents (e.g., warranties, contracts, product information, instruction manuals).	1	1
2.1 Analyze the structure and format of functional workplace documents, including the graphics and headers, and explain how authors use the features to achieve their purposes.	3	3

† *Eighth-grade content standard.*

* Blueprint approved by the State Board of Education on December 7, 2000.

Standards and Assessment Division
California Department of Education

CAHSEE Language Arts Blueprint*

Revised December 2000

California Content Standard	Number and Type of Items	July 2003 Proposed Revision
2.2 Prepare a bibliography of reference materials for a report using a variety of consumer, workplace, and public documents.	2	0
Comprehension and Analysis of Grade-Level-Appreciated Text		
2.3 Generate relevant questions about readings on issues that can be researched.	2	1
2.4 Synthesize the content from several sources or works by a single author dealing with a single issue; paraphrase the ideas and connect them to other sources and related topics to demonstrate comprehension.	3	3
2.5 Extend ideas presented in primary or secondary sources through original analysis, evaluation, and elaboration.	3	3
2.6 Demonstrate the use of sophisticated learning tools by following technical directions (e.g., those found with graphic calculators and specialized software programs and in access guides to World Wide Web sites on the Internet).	0	0
Expository Critique		
2.7 Critique the logic of functional documents by examining the sequence of information and procedures in anticipation of possible reader misunderstandings.	3	3
2.8 Evaluate the credibility of an author's argument or defense of a claim by critiquing the relationship between generalizations and evidence, the comprehensiveness of evidence, and the way in which the author's intent affects the structure and tone of the text (e.g., in professional journals, editorials, political speeches, primary source material).	7	5

* Blueprint approved by the State Board of Education on December 7, 2000.

CAHSEE Language Arts Blueprint*

Revised December 2000

California Content Standard	Number and Type of Items	July 2003 Proposed Revision
3.0 Literary Response and Analysis Students read and respond to historically or culturally significant works of literature that reflect and enhance their studies of history and social science. They conduct in-depth analysis of recurrent patterns and themes. The selections in *Recommended Literature, Grades Nine Through Twelve* illustrate the quality and complexity of the materials to be read by students.	24 Multiple-choice Items	22 Multiple-choice Items
Structural Features of Literature		
3.1 Articulate the relationship between the expressed purposes and the characteristics of different forms of dramatic literature (e.g., comedy, tragedy, drama, dramatic monologue).	2	2
3.2 Compare and contrast the presentation of a similar theme or topic across genres to explain how the selection of genre shapes the theme or topic.	0	0
Narrative Analysis of Grade-Level-Appropriate Text		
3.3 Analyze interactions between main and subordinate characters in a literary text (e.g., internal and external conflicts, motivations, relationships, influences) and explain the way those interactions affect the plot.	2	2
3.4 Determine characters' traits by what the characters say about themselves in narration, dialogue, dramatic monologue, and soliloquy.	2	2
3.5 Compare works that express a universal theme and provide evidence to support the ideas expressed in each work.	4	3
3.6 Analyze and trace an author's development of time and sequence, including the use of complex literary devices (e.g., foreshadowing, flashbacks).	2	2
3.7 Recognize and understand the significance of various literary devices, including figurative language, imagery, allegory, and symbolism, and explain their appeal.	2	2
3.8 Interpret and evaluate the impact of ambiguities, subtleties, contradictions, ironies, and incongruities in a text.	2	2

* Blueprint approved by the State Board of Education on December 7, 2000.

Standards and Assessment Division
California Department of Education

CAHSEE Language Arts Blueprint*

Revised December 2000

California Content Standard	Number and Type of Items	July 2003 **Proposed Revision**
3.9 Explain how voice, persona, and the choice of a narrator affect characterization and the tone, plot, and credibility of a text.	2	2
3.10 Identify and describe the function of dialogue, scene designs, soliloquies, asides, and character foils in dramatic literature:	2	1
Literary Criticism †8.3.7 Analyze a work of literature, showing how it reflects the heritage, traditions, attitudes, and beliefs of its author. (Biographical approach) 3.11 Evaluate the aesthetic qualities of style, including the impact of diction and figurative language on tone, mood, and theme, using the terminology of literary criticism. (Aesthetic approach) 3.12 Analyze the way in which a work of literature is related to the themes and issues of its historical period. (Historical approach)	4 (Tasks that assess the three different approaches will be rotated across test forms.)	4 (Tasks that assess the three different approaches will be rotated across test forms.)
Writing (Grades Nine and Ten)	24 Multiple-choice Items	21 Multiple-choice Items
1.0 Writing Strategies Students write clear, coherent, and focused essays. The writing exhibits students' awareness of audience and purpose. Essays contain formal introductions, supporting evidence, and conclusions. Students progress through the stages of the writing process as needed.	11 Multiple-choice Items	9 Multiple-choice Items
Organization and Focus 1.1 Establish a controlling impression or coherent thesis that conveys a clear and distinctive perspective on the subject and maintain a consistent tone and focus throughout the piece of writing.	2	2
1.2 Use precise language, action verbs, sensory details, appropriate modifiers, and the active rather than the passive voice.	3	3

† *Eighth-grade content standard.*

* Blueprint approved by the State Board of Education on December 7, 2000.

CAHSEE Language Arts Blueprint*
Revised December 2000

California Content Standard	Number and Type of Items	July 2003 **Proposed Revision**
Research and Technology		
1.3 Use clear research questions and suitable research methods (e.g., library, electronic media, personal interview) to elicit and present evidence from primary and secondary sources.	1	0
1.4 Develop the main ideas within the body of the composition through supporting evidence (e.g., scenarios, commonly held beliefs, hypotheses, definitions).	1	1
1.5 Synthesize information from multiple sources and identify complexities and discrepancies in the information and the different perspectives found in each medium (e.g., almanacs, microfiche, news sources, in-depth field studies, speeches, journals, technical documents).	1	1
1.6 Integrate quotations and citations into a written text while maintaining the flow of ideas.	1	0
1.7 Use appropriate conventions for documentation in the text, notes, and bibliographies by adhering to those in style manuals (e.g., Modern Language Association Handbook, The Chicago Manual of Style).	0	0
1.8 Design and publish documents by using advanced publishing software and graphic programs.	0	0
Evaluation and Revision		
1.9 Revise writing to improve the logic and coherence of the organization and controlling perspective, the precision of word choice, and the tone by taking into consideration the audience, purpose, and formality of the context.	2	2
2.0 Writing Applications (Genres and Their Characteristics) Students combine the rhetorical strategies of narration, exposition, persuasion, and description to produce texts of at least 1,500 words each. Student writing demonstrates a command of standard American English and the research, organizational, and drafting strategies outlined in Writing Standard 1.0.	Essay Items	Essay Items

* Blueprint approved by the State Board of Education on December 7, 2000.

CAHSEE Language Arts Blueprint*
Revised December 2000

California Content Standard	Number and Type of Items	July 2003 Proposed Revision
Using the writing strategies of grades nine and ten outlined in Writing Standard 1.0, students:	√	√
2.1 Write biographical or autobiographical narratives or short stories:		
a. Relate a sequence of events and communicate the significance of the events to the audience.		
b. Locate scenes and incidents in specific places.		
c. Describe with concrete sensory details the sights, sounds, and smells of a scene and the specific actions, movements, gestures, and feelings of the characters; use interior monologue to depict the characters' feelings.		
d. Pace the presentation of actions to accommodate changes in time and mood.		
e. Make effective use of descriptions of appearance, images, shifting perspectives, and sensory details.		
2.2 Write responses to literature:	√	√
a. Demonstrate a comprehensive grasp of the significant ideas of literary works.		
b. Support important ideas and viewpoints through accurate and detailed references to the text or to other works.		
c. Demonstrate awareness of the author's use of stylistic devices and an appreciation of the effects created.		
d. Identify and assess the impact of perceived ambiguities, nuances, and complexities within the text.		
2.3 Write expository compositions, including analytical essays and research reports:	√	√
a. Marshal evidence in support of a thesis and related claims, including information on all relevant perspectives.		

√ Covered on this exam.

* Blueprint approved by the State Board of Education on December 7, 2000.

Standards and Assessment Division
California Department of Education

CAHSEE Language Arts Blueprint*
Revised December 2000

California Content Standard	Number and Type of Items	July 2003 Proposed Revision
b. Convey information and ideas from primary and secondary sources accurately and coherently.		
c. Make distinctions between the relative value and significance of specific data, facts, and ideas.		
~~d. Include visual aids by employing appropriate technology to organize and record information on charts, maps, and graphs.~~		
e. Anticipate and address readers' potential misunderstandings, biases, and expectations.		
f. Use technical terms and notations accurately.		
2.4 Write persuasive compositions:	√	√
a. Structure ideas and arguments in a sustained and logical fashion.		
b. Use specific rhetorical devices to support assertions (e.g., appeal to logic through reasoning; appeal to emotion or ethical belief; relate a personal anecdote, case study, or analogy).		
c. Clarify and defend positions with precise and relevant evidence, including facts, expert opinions, quotations, and expressions of commonly accepted beliefs and logical reasoning.		
d. Address readers' concerns, counterclaims, biases, and expectations.		
2.5 Write business letters:	√	√
a. Provide clear and purposeful information and address the intended audience appropriately.		
b. Use appropriate vocabulary, tone, and style to take into account the nature of the relationship with, and the knowledge and interests of, the recipients.		
c. Highlight central ideas or images.		

√ Covered on this exam

* Blueprint approved by the State Board of Education on December 7, 2000.

Standards and Assessment Division
California Department of Education

CAHSEE Language Arts Blueprint*
Revised December 2000

California Content Standard	Number and Type of Items	July 2003 **Proposed Revision**

d.   Follow a conventional style with page formats, fonts, and spacing that contribute to the documents' readability and impact.
 	
2.6   Write technical documents (e.g., a manual on rules of behavior for conflict resolution, procedures for conducting a meeting, minutes of a meeting):
 	
    a.   Report information and convey ideas logically and correctly.
 	
    b.   Offer detailed and accurate specifications.
 	
    c.   Include scenarios, definitions, and examples to aid comprehension (e.g., troubleshooting guide).
 	
    d. Anticipate readers' problems, mistakes, and misunderstandings.		

1.0 Written and Oral English Language Conventions Students write and speak with a command of standard English conventions.	13 Multiple-choice Items	12 Multiple-choice Items
Grammar and Mechanics of Writing 1.1 Identify and correctly use clauses (e.g., main and subordinate), phrases (e.g., gerund, infinitive, and participial), and mechanics of punctuation (e.g., semicolons, colons, ellipses, hyphens).	4	4
1.2 Understand sentence construction (e.g., parallel structure, subordination, proper placement of modifiers) and proper English usage (e.g., consistency of verb tenses).	4	4
1.3 Demonstrate an understanding of proper English usage and control of grammar, paragraph and sentence structure, diction, and syntax.	4	4
Manuscript Form 1.4 Produce legible work that shows accurate spelling and correct use of the conventions of punctuation and capitalization.	0	0
1.5 Reflect appropriate manuscript requirements, including title page presentation, pagination, spacing and margins, and integration of source and support material (e.g., in-text citation, use of direct quotations, paraphrasing) with appropriate citations.	1	0

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CAHSEE Language Arts Blueprint*

Revised December 2000

2 Essays

    1 from standards 2.2 or 2.3

      Response to Literature or Analytic Essay (Expository Writing)

    1 from standards 2.1, 2.4 or 2.5

      Biography, persuasion, business letter

July 2003 Proposed Revision

    1 Essay-Randomly rotate all categories of writing for each test administration

    1 from standards 2.2 or 2.3

    Response to Literature or Analytic Essay (Expository Writing)

    Or from 2.1, 2.4, or 2.5

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CAHSEE Math Blueprint*
Revised December 2000

California Content Standard	Number of Items	July 2003 **Proposed Revisions**
Grade 6—Statistics, Data Analysis, and Probability	6 Items Total	9 Items total
1.0 Students compute and analyze statistical measurements for data sets:		
1.1 Compute the ~~range~~, mean, median, and mode of data sets.	1	3
1.2 Understand how additional data added to data sets may affect these computations of measures of central tendency.	0	0
1.3 Understand how the inclusion or exclusion of outliers affects measures of central tendency.	0	0
1.4 Know why a specific measure of central tendency (mean, median, mode) provides the most useful information in a given context.	0	0
2.0 Students use data samples of a population and describe the characteristics and limitations of the samples:		
2.1 Compare different samples of a population with the data from the entire population and identify a situation in which it makes sense to use a sample.	0	0
2.2 Identify different ways of selecting a sample (e.g., convenience sampling, responses to a survey, random sampling) and which method makes a sample more representative for a population.	0	0
2.3 Analyze data displays and explain why the way in which the question was asked might have influenced the results obtained and why the way in which the results were displayed might have influenced the conclusions reached.	0	0
2.4 Identify data that represent sampling errors and explain why the sample (and the display) might be biased.	0	0
2.5 Identify claims based on statistical data and, in simple cases, evaluate the validity of the claims.	1	1

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Standards and Assessment Division
California Department of Education

CAHSEE Math Blueprint*

Revised December 2000

California Content Standard	Number of Items	July 2003 **Proposed Revision**
3.0 Students determine theoretical and experimental probabilities and use these to make predictions about events:		
3.1 Represent all possible outcomes for compound events in an organized way (e.g., tables, grids, tree diagrams) and express the theoretical probability of each outcome.	1	1
3.2 Use data to estimate the probability of future events (e.g., batting averages or number of accidents per mile driven).	0	0
3.3 Represent probabilities as ratios, proportions, decimals between 0 and 1, and percentages between 0 and 100 and verify that the probabilities computed are reasonable; know that if P is the probability of an event, $1-P$ is the probability of an event not occurring.	2	2
3.4 Understand that the probability of either of two disjoint events occurring is the sum of the two individual probabilities and that the probability of one event following another, in independent trials, is the product of the two probabilities.	0	0
3.5 Understand the difference between independent and dependent events.	1	1
Grade 7—Number Sense	14 Items Total	None
1.0 Students know the properties of, and compute with, rational numbers expressed in a variety of forms:		
1.1 Read, write, and compare rational numbers in scientific notation (positive and negative powers of 10) with approximate numbers using scientific notation.	1	1
1.2 Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers	3	3
1.3 Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.	2	2

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CAHSEE Math Blueprint*
Revised December 2000

California Content Standard	Number of Items	July 2003 **Proposed Revision**
1.4 Differentiate between rational and irrational numbers.	0	0
1.5 Know that every rational number is either a terminating or repeating decimal and be able to convert terminating decimals into reduced fractions.	0	0
1.6 Calculate the percentage of increases and decreases of a quantity.	1	1
1.7 Solve problems that involve discounts, markups, commissions, and profit and compute simple and compound interest.	2	2
2.0 Students use exponents, powers, and roots and use exponents in working with fractions:		
2.1 Understand negative whole-number exponents. Multiply and divide expressions involving exponents with a common base.	1	1
2.2 Add and subtract fractions by using factoring to find common denominators.	1	1
2.3 Multiply, divide, and simplify rational numbers by using exponent rules.	1	1
2.4 Use the inverse relationship between raising to a power and extracting the root of a perfect square integer; for an integer that is not square, determine without a calculator the two integers between which its square root lies and explain why.	1	1
2.5 Understand the meaning of the absolute value of a number; interpret the absolute value as the distance of the number from zero on a number line; and determine the absolute value of real numbers.	1	1
Grade 7—Algebra and Functions	17 Items Total	None
1.0 Students express quantitative relationships by using algebraic terminology, expressions, equations, inequalities, and graphs:		
1.1 Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A).	2	2

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CAHSEE Math Blueprint*
Revised December 2000

California Content Standard	Number of Items	July 2003 **Proposed Revision**
1.2 Use the correct order of operations to evaluate algebraic expressions such as $3(2x+5)^2$.	1	1
1.3 Simplify numerical expressions by applying properties of rational numbers (e.g., identity, inverse, distributive, associative, commutative) and justify the process used.	0	0
1.4 Use algebraic terminology (e.g., variable, equation, term, coefficient, inequality, expression, constant) correctly.	0	0
1.5 Represent quantitative relationships graphically and interpret the meaning of a specific part of a graph in the situation represented by the graph.	3	3
2.0 Students interpret and evaluate expressions involving integer powers and simple roots:		
2.1 Interpret positive whole-number powers as repeated multiplication and negative whole-number powers as repeated division or multiplication by the multiplicative inverse. Simplify and evaluate expressions that include exponents.	1	1
2.2 Multiply and divide monomials; extend the process of taking powers and extracting roots to monomials when the latter results in a monomial with an integer exponent.	1	1
3.0 Students graph and interpret linear and some nonlinear functions:		
3.1 Graph functions of the form $y=nx^2$ and $y=nx^3$ and use in solving problems.	1	1
3.2 Plot the values from the volumes of three-dimensional shapes for various values of the edge lengths (e.g., cubes with varying edge lengths or a triangle prism with a fixed height and an equilateral triangle base of varying lengths).	0	0
3.3 Graph linear functions, noting that the vertical change (change in y-value) per unit of horizontal change (change in x-value) is always the same and know that the ratio ("rise over run") is called the slope of a graph.	2	2

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CAHSEE Math Blueprint*

Revised December 2000

California Content Standard	Number of Items	July 2003 **Proposed Revision**
3.4 Plot the values of quantities whose ratios are always the same (e.g., cost to the number of an item, feet to inches, circumference to diameter of a circle). Fit a line to the plot and understand that the slope of a line equals the quantities.	1	1
4.0 Students solve simple linear equations and inequalities over the rational numbers:		
4.1 Solve two-step linear equations and inequalities in one variable over the rational numbers, interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results.	3	3
4.2 Solve multistep problems involving rate, average speed, distance, and time or a direct variation.	2	2
Grade 7—Measurement and Geometry	17 Items Total	None
1.0 Students choose appropriate units of measure and use ratios to convert within and between measurement systems to solve problems:		
1.1 Compare weights, capacities, geometric measures, times, and temperatures within and between measurement systems (e.g., miles per hour and feet per second, cubic inches to cubic centimeters).	2	2
1.2 Construct and read drawings and models made to scale.	1	1
1.3 Use measures expressed as rates (e.g., speed, density) and measures expressed as products (e.g., person-days) to solve problems; check the units of the solutions; and use dimensional analysis to check the reasonableness of the answer.	2	2
2.0 Students compute the perimeter, area, and volume of common geometric objects and use the results to find measures of less common objects. They know how perimeter, area and volume are affected by changes of scale:		
2.1 Use formulas routinely for finding the perimeter and area of basic two-dimensional figures and the surface area and volume of basic three-dimensional figures, including rectangles, parallelograms, trapezoids, squares, triangles, circles, prisms and cylinders.	3	3

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Standards and Assessment Division
California Department of Education

CAHSEE Math Blueprint*

Revised December 2000

California Content Standard	Number of Items	July 2003 **Proposed Revision**
2.2 Estimate and compute the area of more complex or irregular two- and three-dimensional figures by breaking the figures down into more basic geometric objects.	2	2
2.3 Compute the length of the perimeter, the surface area of the faces, and the volume of a three-dimensional object built from rectangular solids. Understand that when the lengths of all dimensions are multiplied by a scale factor, the surface area is multiplied by the square of the scale factor and volume is multiplied by the cube of the scale factor.	1	1
2.4 Relate the changes in measurement with a change of scale to the units used (e.g., square inches, cubic feet) and to conversions between units (1square foot = 144 square inches or $[1 \text{ ft}^2] = [144 \text{ in}^2]$, 1 cubic inch is approximately 16.38 cubic centimeters or $[1 \text{ in}^3] = [16.38 \text{ cm}^3]$.)	1	1
3.0 Students know the Pythagorean theorem and deepen their understanding of plane and solid geometric shapes by constructing figures that meet given conditions and by identifying attributes of figures:		
3.1 Identify and construct basic elements of geometric figures (e.g., altitudes, mid-points, diagonals, angle bisectors, and perpendicular bisectors; central angles, radii, diameters, and chords of circles) by using a compass and straightedge.	0	0
3.2 Understand and use coordinate graphs to plot simple figures, determine lengths and areas related to them, and determine their image under translations and reflections.	2	2
3.3 Know and understand the Pythagorean theorem and its converse and use it to find the length of the missing side of a right triangle and the lengths of other line segments and, in some situations, empirically verify the Pythagorean theorem by direct measurement.	2	2
3.4 Demonstrate an understanding of conditions that indicate two geometrical figures are congruent and what congruence means about the relationships between the sides and angles of the two figures.	1	1

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Standards and Assessment Division
California Department of Education

CAHSEE Math Blueprint*
Revised December 2000

California Content Standard	Number of Items	July 2003 **Proposed Revision**
3.5 Construct two-dimensional patterns for three-dimensional models, such as cylinders, prisms, and cones.	0	0
3.6 Identify elements of three-dimensional geometric objects (e.g., diagonals of rectangular solids) and describe how two or more objects are related in space (e.g., skew lines, the possible ways three planes might intersect).	0	0
Grade 7—Statistics, Data Analysis, and Probability	6 Items Total	4 Items Total
1.0 Students collect, organize, and represent data sets that have one or more variables and identify relationships among variables within a data set by hand and through the use of an electronic spreadsheet software program:		
1.1 Know various forms of display for data sets, including a stem-and-leaf plot or box-and-whisker plot; use the forms to display a single set of data or to compare two sets of data.	2	2
1.2 Represent two numerical variables on a scatterplot and informally describe how the data points are distributed and any apparent relationship that exists between the two variables (e.g., between time spent on homework and grade level).	2	2
1.3 Understand the meaning of, and be able to compute the minimum, the lower quartile, the median, the upper quartile, and the maximum of a data set.	2	0
Grade 7—Mathematical Reasoning	8 Items Total Plus Integrated into Other Strands	None
1.0 Students make decisions about how to approach problems:		
1.1 Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.	2	2
1.2 Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed.	1	1
1.3 Determine when and how to break a problem into simpler parts.	0	0

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Standards and Assessment Division
California Department of Education

CAHSEE Math Blueprint*

Revised December 2000

California Content Standard	Number of Items	July 2003 **Proposed Revision**
2.0 Student use strategies, skills, and concepts in finding solutions:		
2.1 Use estimation to verify the reasonableness of calculated results.	1	2
2.2 Apply strategies and results from simpler problems to more complex problems.	0	0
2.3 Estimate unknown quantities graphically and solve for them by using logical reasoning and arithmetic and algebraic techniques.	1	1
2.4 Make and test conjectures by using both inductive and deductive reasoning.	1	1
2.5 Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.	0	0
2.6 Express the solution clearly and logically by using the appropriate mathematical notation and terms and clear language; support solutions with evidence in both verbal and symbolic work.	0	0
2.7 Indicate the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.	0	0
2.8 Make precise calculations and check the validity of the results from the context of the problem.	0	0
3.0 Students determine a solution is complete and move beyond a particular problem by generalizing to other situations:		
3.1 Evaluate the reasonableness of the solution in the context of the original situation.	1	0
3.2 Note the method of deriving the solution and demonstrate a conceptual understanding of the derivation by solving similar problems.	0	0
3.3 Develop generalizations of the results obtained and the strategies used and apply them to new problem situations.	1	1

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Standards and Assessment Division
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CAHSEE Math Blueprint*
Revised December 2000

California Content Standard	Number of Items	July 2003 **Proposed Revision**
Algebra I	12 Items Total	
1.0 Students identify and use the arithmetic properties of subsets of integers and rational, irrational, and real numbers, including closure properties for the four basic arithmetic operations where applicable: 1.1 Students use properties of numbers to demonstrate whether assertions are true or false.	0	0
2.0 Students understand and use such operations as taking the opposite, finding the reciprocal, <u>and</u> taking a root, ~~and raising to a fractional power~~. They understand and use the rules of exponents.	1	1
3.0 Students solve equations and inequalities involving absolute values.	1	1
4.0 Students simplify expressions before solving linear equations and inequalities in one variable, such as $3(2x-5) + 4(x-2) = 12$.	2	2
5.0 Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.	1	1
6.0 Students graph a linear equation and compute the x- and y-intercepts (e.g., graph $2x + 6y = 4$). ~~They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by 2x + 6y < 4).~~	2 (1 graphing item; 1 computing item)	2 (1 graphing item; 1 computing item)
7.0 Students verify that a point lies on a line, given an equation of the line. Students are able to derive linear equations. ~~by using the point-slope formula.~~	1	1
8.0 Students understand the concepts of parallel lines ~~and perpendicular lines~~ and how their slopes are related. ~~Students are able to find the equation of a line perpendicular to a given line that passes through a given point.~~	1	1
9.0 Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically. Students are able to solve a system of two linear inequalities in two variables and to sketch the solution sets.	1	1

CAHSEE Math Blueprint*

Revised December 2000

California Content Standard	Number of Items	July 2003 **Proposed Revision**
10.0 Students add, subtract, multiply, and divide monomials and polynomials. Students solve multistep problems, including word problems, by using these techniques.	1	1
11.0 Students apply basic factoring techniques to second- and simple third-degree polynomials. These techniques include finding a common factor for all terms in a polynomial, recognizing the difference of two squares, and recognizing perfect squares of binomials.	0	0
12.0 Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms.	0	0
13.0 Students add, subtract, multiply, and divide rational expressions and functions. Students solve both computationally and conceptually challenging problems by using these techniques.	0	0
14.0 Students solve a quadratic equation by factoring or completing the square.	0	0
15.0 Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.	1	1
16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.	0	0
17.0 Students determine the domain of independent variables and the range of dependent variables defined by a graph, a set of ordered pairs, or a symbolic expression.	0	0
18.0 Students determine whether a relation defined by a graph, a set of ordered pairs, or a symbolic expression is a function and justify the conclusion.	0	0
19.0 Students know the quadratic formula and are familiar with its proof by completing the square.	0	0

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Standards and Assessment Division
California Department of Education

CAHSEE Math Blueprint*
Revised December 2000

California Content Standard	Number of Items	July 2003 **Proposed Revision**
20.0 Students use the quadratic formula to find the roots of a second-degree polynomial and to solve quadratic equations.	0	0
21.0 Students graph quadratic functions and know that their roots are the x-intercepts.	0	0
22.0 Students use the quadratic formula or factoring techniques or both to determine whether the graph of a quadratic function will intersect the x-axis in zero, one, or two points.	0	0
23.0 Students apply quadratic equations to physical problems, such as the motion of an object under the force of gravity.	0	0
24.0 Students use and know simple aspects of a logical argument:		
24.1 Students explain the difference between inductive and deductive reasoning and identify and provide examples of each.	0	0
24.2 Students identify the hypothesis and conclusion in logical deduction.	0	0
24.3 Students use counterexamples to show that an assertion is false and recognize that a single counterexample is sufficient to refute an assertion.	0	0
25.0 Students use properties of the number system to judge the validity of results, to justify each step of a procedure, and to prove or disprove statements:		
25.1 Students use properties of numbers to construct simple, valid arguments (direct and indirect) for, or formulate counterexamples to, claimed assertions.	0	0
25.2 Students judge the validity of an argument according to whether the properties of the real number system and the order of operations have been applied correctly at each step.	0	0
25.3 Given a specific algebraic statement involving linear, quadratic, or absolute value expressions or equations or inequalities, students determine whether the statement is true sometimes, always, or never.	0	0

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Standards and Assessment Division
California Department of Education

Alternatives for Scaling the California High School Exit Examination
Educational Testing Service
June 12, 2003

When test specifications are revised, there is opportunity to revise the score scale that defines the test. In particular, the standards for educational and psychological testing recommend such action:

> When substantial changes in test specifications occur, either scores should be reported on a new scale or a clear statement should be provided to alert users that the scores are not directly comparable with those on earlier versions of the test[1]

The current CAHSEE scale ranges from 250 to 450, with the passing point defined at 350. The use of this scale has raised several concerns. These include:

- Research has indicated that the score points between 250 and 300 do not measure meaningful variation in student scores.
- The CAHSEE scale has properties that overlap with the California Standards Test (CST) score scales in ways that may lead to misinterpretation. In particular, "proficient" is set at 350 on the CST scales. This promotes the incorrect interpretation that a student who passes CAHSEE is "proficient" as defined by the CSTs.
- Recent NCLB requirements have resulted in the use of CAHSEE for reporting adequate yearly progress of 10th grade California students in Mathematics and English Language Arts. For these purposes, initial cut points defining "proficient" and "advanced" have been placed on the scale without a formal standard setting but using relationships between score distributions for on CAHSEE and the CST ("proficient" and "advanced" for Mathematics are at 373 and 417, respectively, and at 387 and 413 for English language arts).

Although future plans for the CAHSEE are somewhat uncertain at this time, if the CAHSEE test specifications are revised and a new passing score is established in Fall 2003, it makes sense to consider revising CAHSEE score scale as well. The following observations are helpful to include in such considerations:

- The points in the reported score scale should be approximately equal to the number of meaningful raw score points, e.g., if a multiple-choice test with four answer options is composed of 80 questions, there are probably only 60 to 70 meaningful score points because of the effects of guessing.
- The score scale should ensure that each raw score value maps to a different scaled score value throughout the score scale.
- The score scale should not take on a range that would promote confusion with other tests or scores commonly used (e.g., the CSTs, the SAT, the ACT, percentile ranks, etc.).
- To the extent feasible, the score scale should allow cut scores to be set at easily remembered values.
- It will be important to communicate the properties of the new CAHSEE score scale to

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1 American Educational Research Association, American Psychological Association, & National Council on Measurement in Education (1999). *Standards for Educational and Psychological Testing.* Washington, DC: American Psychological Association.

school districts prior to its first use.

A number of alternative revised CAHSEE scales are possible, each of which would have strong technical properties, and it would be premature to recommend a specific scale without knowing the number of items in each test and how constructed-response items in the English-language arts test will be weighted as compared with multiple-choice items. However, it will be most desirable for the revised CAHSEE scale to minimize gaps in reported scaled scores given consecutive raw scores. For example, currently one might see that CAHSEE raw scores of 44 and 45 convert to scaled scores of 349 and 354 in one administration and 350 and 355 in another. The difference between 349 and 350 goes beyond what the precision of the test supports—it is not a meaningful distinction. Furthermore, the score of 349 is not a passing score even though it represents a level of performance that is virtually identical to the performance that converts to a 350.

Should the CAHSEE be revised, ETS will be pleased to work with the CDE and their technical advisors to develop an alternative CAHSEE scale that strikes the best possible balance between distinguishing different levels of performance and minimizing the scaled score gaps corresponding to these different levels.